OSA-0458-64

22 January 1964

Dear Al:

Subject: Sponge Rubber Spacer to Replace Present Rigid Spacer on Top of Kit 25X1A

25X1A 1. Reference is made to a letter dated 9 January from [redacted] to myself with info copies to [redacted] same subject as above.

2. The problem of properly supporting the parachute has been discussed for many months and now, in view of the emphasis on comfort improvement, I believe we should consider modification suggestions that look promising. This was vividly brought to my attention last week when I saw the method being employed by our friends out yonder. They are covering the rigid block with foam and securing it to the kit with masking tape similar to the way we did it at Centro. I believe you will agree that we should be able to do better.

3. Perhaps Ed is on the right track with his modification, however, by making the entire support block out of foam we lose survival item space now in the rigid block. Would like you to investigate the possibility of using the rigid block plus the foam and still maintain the parachute support mentioned in Ed's letter.

4. Would appreciate your comments on this and/or other possible ways to improve the situation.

Sincerely,

[redacted] 25X1A

AM-1023 B

OSA - 0474-64

17 January 1964

[redacted] 25X1A

25X1A TO: [redacted]

Dear Ed:

During our meeting of December 17th, we agreed to accomplish a number of tasks by January 15th. At this time we are not completely finished but we do have a large share of the tasks completed.

The new suit vent flow valve, requested by you, was sent 25X1A to [redacted] and has been flown. [redacted] reports better vent flow control with this new model, however, this valve design problem cannot be totally resolved until the back pressure control is installed in the vent system.

We have partially completed the suit dynamic exercise work with varying results on modifications and new approaches. Part of this work is being held up until we check out the compensated exhalation valve installations in the helmet.

We have investigated means of reducing sensitivity in the breathing system. One of our principle investigations 25X1A was [redacted] reservoir approach. This approach affected the breathing characteristics to the point where we have serious reservations about future work in this area.

We have come up with a method of reducing the suit controller back pressure for the conditions which we have examined. As you have inferred in the past, we believe that a lower controller back pressure will reduce the affect of the dynamic pressure spikes on oxygen usage.

I discussed helmet face dam modification studies with 25X1A [redacted] yesterday. He has not made the progress that we would like in this area but expects to have additional tests completed some time next week. The tests that we have run on rigid and semi-rigid head bumpers, to minimize the motion differential between helmet and face dam, have been insignificant.

In checking our altitude chamber ventilation system for flow volume we found that we are lacking capacity as we are interested in getting flows up to 50 CFM. We believe this restriction has been corrected with the modifications made, unfortunately, [redacted] showed up a week early tying up our chamber until the first part of next week. These altitude flow versus back pressure curves should require only one or two days of actual test work.

25X1A

We have requalified all affected components in the high pressure system to the 3000 psi pressure. We experienced no difficulty with any item and at the present time believe the only change will be to raise the pressure schedule a few pounds. The reports are now being prepared on these tests.

25X1A [redacted] has been successful in mounting the balance valve in the panel envelope given us by [redacted]. We are proceeding to make a sample of this unit for evaluation purposes. A feature added to the assembly is a manual controller on the balance valve, something which we did not have before, however, to date we have not been able to generate a means to compensate for the failure mode of flow stoppage but retention of system pressure.

25X1A

Your suggestion of using a constant by-pass or a pressure actuated by-pass was investigated and found not to answer the problem satisfactorily. In checking the constant by-pass we found that a 5 SLPM constant flow by-pass resulted in a system pressure spread of almost 200 PSI before stabilization. This compares to the 60 PSI pressure spread of the existing valve. Tests using a 10 SLPM constant by-pass were stopped after the system pressure differential reached 400 PSI.

Your suggestion of a pressure actuated by-pass, using increased or greater sub-system pressure for actuating, was considered. However, once the system in which flow has stopped shuts off the good or lower system, no further pressure decay occurs in either system. Therefore, there is no increasing pressure differential for actuation or for use as a signal.

We are continuing our efforts for a total fail-safe design of the balance valve. All of our ideas and approaches to this problem solution had negative results. If you or Dan have additional suggestions we would certainly appreciate them.

AM- 023
1 January 1964

We are pursuing all uncompleted areas and expect to have all tests completed the week of the 27th.

Do advise me as to the possibility of getting together to discuss the results of the work we are doing and applications of design changes.

Very truly yours,

25X1A

p

25X1A

cc:

STAT

STATINTL

In answer please refer to

12 December 1963

81-JRD:dh-342

The Firewel Company, Inc.
3695 Broadway
Buffalo 25, New York

STATINTL Attention:

STATINTL Dear

I received your letter of December 4, 1963, and read with interest your brochure from The Firewel Company. Being an ex-Buffalonian, I can remember the early days of The Firewel Company.

Our problems with canopy reflection in the Sioux Scout have to do with in-flight camouflage effects, rather than internal glare or night flight effects and probably are not similar to your visual problem.

We have discussed this briefly with STAT but so far have not STATINTL made any progress towards developing a low reflective helicopter canopy.

Yours very truly,

STATINTL cc:

STAT

OSA ◻ 63[illegible]

AM-982

16 December 1963

25X1A [redacted]

25X1A TO: [redacted]

Dear George:

Enclosed is a rough draft copy of our Parachute Packing Instructions. We would appreciate your immediate attention in editing and returning the manuscript so that we can go into final printing. You will note that all the illustrations are in a separate folder for the draft only. The final copy will be similar to the enclosed sample handbook. The text will be double columns, with the half-tone photos inserted in the appropriate places throughout.

The earlier you return the draft with your comments, the sooner we will be able to furnish the final printed copies. 25X1A [redacted] has already approved the preliminary draft.

Very truly yours,

[redacted] 25X1A

p

25X1 cc: [redacted]

25X1A

Approved For Release 2002/07/30 : CIA-RDP75B00285R000300180004-6

RFZ --
23 December 1963

SPECIAL PROJECT PROGRAM

OSA-6390-63

Part A - To be completed by 15 January 1964
Part B - To be completed by 1 March 1964
Part C - To be completed by 1 February 1964

(A) SUIT

(1) Altitude Flow vs Back Pressure Curves

3 Pressure Taps - a) Seat Disconnect
b) Helmet
c) Controller

(Check locally for differential without water check?) Runs to be made at ground level, 4,300 Feet, 26,100 Feet, 25,000 Feet.

Cabin ambient flows to 50 CFM (if possible).

(2) Suit Flow Valves

a) Make up linear spool for present back pressure
b) Make up linear spool for 20" Wg pressure

Minimum pressure drop across valve required.

(3) Suit Dynamic Exercise

a) Rerun dynamic tests to determine pressure spikes using existing instruments.

b) Rerun with new measuring instruments.

c) Recheck with altered ΔP of exhalation valve and helmet regulator, and with water check out of suit.

d) Recheck with reduced ΔP controller.

(4) Helmet Regulator & Plumbing

a) Investigate means of making breathing regulator less responsive to dynamic pressure waves in the suit. However, present breathing characteristics must be retained if possible.

25X1 b) Investigate [redacted] reservoir approach on the regulator.

25X1 c) Investigate [redacted] report of regulator spread change with regulator back pressure outlet.

d) Exhalation valve modification, ie, compensated type, new Navy valve, etc.

e) Investigate method of reducing controller back pressure.

(5) Helmet Structure

a) Face dam modification to reduce effect of pressure spikes and waves.

b) Head bumper to move helmet with head instead of face dam.

(B) BALANCE VALVE

(1) Run qualification tests on present design.

a) Examine principle test areas under environmental.

b) Continue functional performance as possible.

(2) Redesign valve to meet full fail safe regime.

a) Valve now shuts off good side when one side fails to flow.

b) Other failure mode, loss of pressure, the valve compensates.

c) Design of valve must be such that valve does not fail full dual system. Preferred design of balance valve is failure of valve affects neither sub-system.

d) Investigate potential of spring loaded seat to reline flow stoppage failure. [redacted] will consider a sub-system differential of 500 psi to power a by-pass system. 25X1A

e) Investigate mounting valve on the oxygen control panel.

(C) HIGH PRESSURE SYSTEM

(1) All affected components and system to be requalified to 3000 psi operating pressure. Similarity will be accepted where possible.

ACTION

Part A -- 1)
2)
3)
4)
5)

Part B -- 1)
2)

Part C -- 1)

25X1A

25X1A

25X1A

hc:

SEC. CL.	ORIGIN	CONTROL NO.

DATE OF DOC.	DATE REC'D	DATE OUT	SUSPENSE DATE	CROSS REFERENCE OR
23 Dec 63	30 Dec 63			

TO

FROM DD/OSA

SUBJ. Letter on SPECIAL PROJECT PROGRAM
(Suit, Balance Valve, and High Pressure System)

1-DD/OSA

ROUTING	DATE SENT

Approved For Release 2002/07/30 : CIA-RDP75B00285R000300180004-6

COURIER NO.	ANSWERED	NO REPLY

[redacted] 25X1A

24 December 1963

OSA-6430-63

[redacted] 25X1A

25X1A Dear [redacted]

As discussed in the meeting on December 16th, there are several areas requiring resolution between [redacted] people, 25X1A
25X1A [redacted] and ourselves. Most of these areas of differences were resolved in further discussions on the 17th and 18th.

As agreed to by all parties, we have met the basic parameters of ventilation requirements, that is volume versus back pressure, for the full pressure suit system as agreed upon four years ago. However, the equipment is not being operated at design parameters. The Drivers are calling for higher flow volume to compensate for the higher flow temperature. We have
25X1A agreed with [redacted] to perform additional work and studies in this area to be completed by the 15th of January 1964.

(A) SUIT INVESTIGATION

(1) Suit Flow Tests

We will develop information in our chamber that will permit us to determine the exact vent flow volume being used by the Drivers.

(2) Suit Dynamic Exercise

Information from [redacted] indicates that there is 25X1A
more torso motion expected than we anticipated, therefore, we will re-run the suit dynamic motion studies.

(3) Helmet Plumbing and Regulator

We will investigate means of making the regulator and associated plumbing less sensitive to suit pressure waves. Helmet suit differential and control valving will be included in this investigation.

(4) Helmet Structure

The affect of a stiffer face dam and better means for moving the helmet through head motion will be studied.

(5) Vent Flow Valve

We are sending a new more linear vent flow valve to the area for evaluation.

(B) EQUALIZER VALVE

As reported at the meeting, we have completed the major share of development work and performance tests on the Equalizer Valve to balance the dual oxygen system. Further discussions with [redacted] 25X1A and his engineers brought out the fact that there is a possible failure condition which the valve does not now meet. The valve balances well within the 200 psi differential allowed and compensates for the loss of pressure in one system. However, it does not compensate for the failure where pressure is retained in the system but flow is stopped. These two failures are direct opposites in action. We will continue our development work on the basis of discussions and agreements with [redacted] 25X1A

(1) We will run qualification and environmental tests on the valve.

(2) We will redesign local components in the valve to meet the flow stoppage failure condition.

(3) We will investigate valve configuration to incorporate it in the oxygen on-off panel.

(C) HIGH PRESSURE OXYGEN SYSTEM

As agreed on at the meeting, the high pressure oxygen supply has been increased from 2800 psi to 3000 psi.

(1) We will requalify to the 3000 pound pressure the system and components as required using similarity to previous tests as a basis whenever possible.

(2) We will up-grade components as necessary. However, our initial discussions indicated that no hardware modifications will be necessary except changing the reducer pressure schedules.

25X1A [redacted]

24 December 1963

(D) LIQUID OXYGEN FOR VEHICLES 132 & 133

Contrary to what I said at the meeting, the standard oxygen converters are qualified to an operating temperature of 260°F in accordance with the latest specification controlling this equipment. We are at present reviewing the schematic for the liquid systems to make sure that all services can be performed in accordance with required operating conditions. This includes fill, purge, drain, pressure test, etc., for both converter system and vehicle tubulation.

(E) SYSTEM HARDWARE UP-GRADING

As mentioned in the meeting we are having some difficulty in arranging for the return of hardware from the field for upgrading at the plant. 25X1A [redacted] volunteered to push this problem from his end. In the next few days we will be supplying Ed a document identifying all individual components involved.

Our present schedule, as determined in our meeting on the 18th with 25X1A [redacted] calls for the completion of Items A, C, and D by the 15th of January. We are anticipating a meeting with 25X1A [redacted] and his engineers shortly after that date to review the data we developed.

25X1A

Very truly yours,

[redacted]

p

25X1A cc: [redacted]

SEC. CL.	ORIGIN	CONTROL NO.

DATE OF DOC.	DATE REC'D	DATE OUT	SUSPENSE DATE	CROSS REFERENCE OR

TO
FROM
SUBJ. Letter on Suit Investigation, Equalize
High Pressure Oxygen System, Liquid Oxygen
132 and 133, and System Hardware Up-Gradin

ROUTING	DATE SENT

1-DD/OSA

COURIER NO.	ANSWERED	NO REPLY	

AM-991

26 December 1963

[redacted] 25X1A

Dear Joe:

As discussed at the meetings on December 16th and 17th, we are programming a considerable amount of effort on the suit and hardware areas to attempt to minimize oxygen consumption. The enclosed letter to [redacted] will give you an idea of the areas we are investigating. Most of these areas were agreed to at the meeting with [redacted] on December 18th. 25X1 25X1A

We would like you to continue the work you started in the area of stiffer face dam design and material. It was reported that you are able to reduce drastically, the affects of suit pressure waves on oxygen consumption through stiffer face dams. It is our opinion that this work should be continued as it can have a great affect on reducing non-breathing losses. At the same time, we are going to experiment with what we call a head bumper in the helmet to move the helmet through direct structural contact rather than relying entirely on the face dam web.

While it did not come under discussion at the general meeting on Monday, I believe all involved are greatly concerned about the face piece reflectance problem. It is mandatory that we keep all necessary efforts going on this problem to resolve it as quickly as possible. If you require or would like assistance from us we will be happy to make an engineer available.

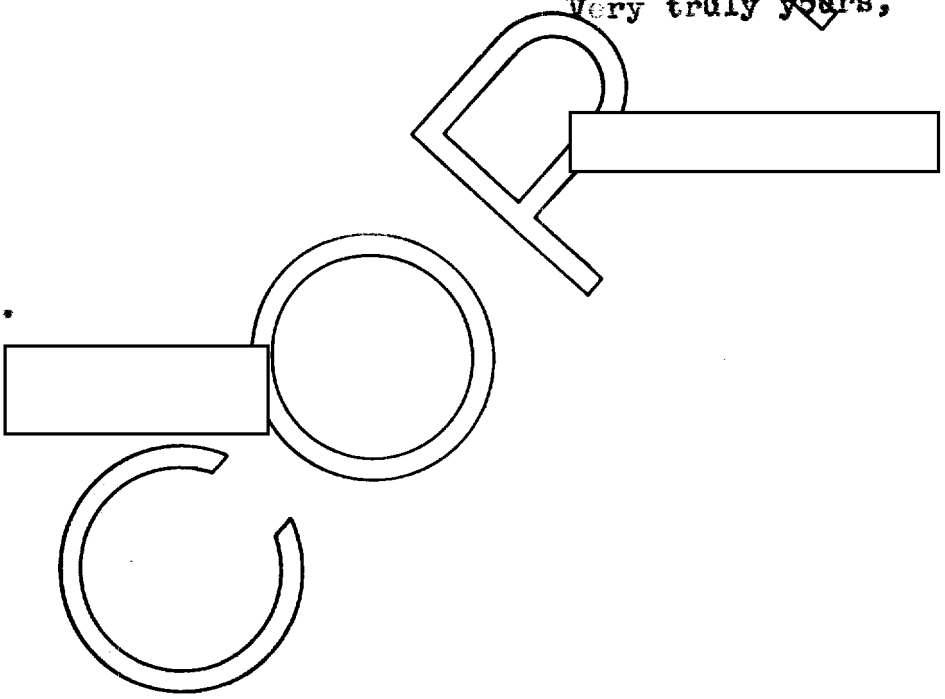
At the meeting on December 16th, you stated you had no experimental or development helmet to use for investigation purposes. Proceed immediately to make a helmet for this usage.

25X1A [redacted]

AM-991
26 December 1963

After we have completed the suit test work indicated on the attached schedule, we will be returning [redacted] 25X1A suit for up-grading. We have found salt deposites in the helmet tubulation. In some tests this has presented a problem. In particular, we would like the neck ring changed to the ring that is the current standard. If the ring cannot be changed we would like to consider making a new helmet for this suit as we believe we should have the latest configuration available for test and development work. If it is necessary to make the new helmet for Harry's suit assembly, would it be possible for you to rework the existing helmet for your development and test work?

Very truly yours,



p

Encl.

25X1A cc: [redacted]

CONTROL NO.

DATE OF DOC.	DATE REC'D	DATE OUT	SUSPENSE DATE	CROSS REFERENCE OR POINT OF FILING
26 Dec 63	30 Dec 63			

TO [redacted]
FROM
SUBJ. Letter on an Attempt to Minimize oxygen Consumption in the Suit-----

ROUTING	DATE SENT
[redacted]	

1-DD/S&A

COURIER NO. DELIVERED RECEIVED

FORM 12d 5-63 USE PREVIOUS EDITIONS

CLASSIFICATION

SECRET

MFG. 8-63

DATE 2015Z 06 DEC 63

ROUTING			
1	OD	9	
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TO : DIRECTOR

25X1A FROM :

ACTION:

INFO : OSA 1—15

TOR: 2052Z 06 DEC 63

ROUTING	INT
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ROUTINE

IN 53291
25X1A

25X1A TO INFO CITE

25X1A OXCART OPS

25X1A SENDING TO FIREWELL THE WEEK OF 9 DEC 63 FOR PURPOSE OF TRAINING AND TO COORDINATE MATTERS OF ORGANIZATIONAL INTEREST RELATIVE TO THE NEW MAINTENANCE VAN.

END OF MESSAGE

SECRET

GROUP 1
Excluded from automatic downgrading and declassification

 Copy No. 6

FORM 12d 5-63 USE PREVIOUS EDITIONS

MFG. 6-63

DATE 2047Z 06 DEC 63

SECRET

ROUTING

1	SS	9	
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PRIORITY

TO : DIRECTOR

25X1A FROM :

ACTION:

INFO : OSA 1-15

TOR: 2101Z 06 DEC 63

ROUTING	INT
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IN 53287
25X1A

25X1A TO PRIORITY [ ] INFO CITE [ ]

OXCART SECUR

NO NIGHT ACTION

25X1A [ ] PROCEEDING FIREWEL 9 DEC 63

FOR BRIEFING ON NEW CHAMBER FOR [ ] ETA BUFFALO 25X1A

1000 LOCAL VIA COMAIR. PLS CERTIFY OXCART-3 CLEARANCE

25X1A [ ] WILL CONTACT [ ] ON ARRIVAL.

END OF MESSAGE

SECRET

GROUP 1
Excluded from automatic downgrading and declassification

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4